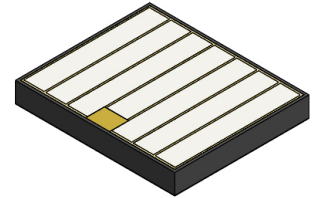


LA WW60SP3

Premium Edition Warm White 60 mil

Light Avenue Premium Edition LED series is designed for high performance consumer applications. Remarkable light extraction is reached by a particular top emitting design with vertical chip structure. As this die can be driven at very high currents compared to the chip size, an outstanding cost vs. performance ratio can be obtained.



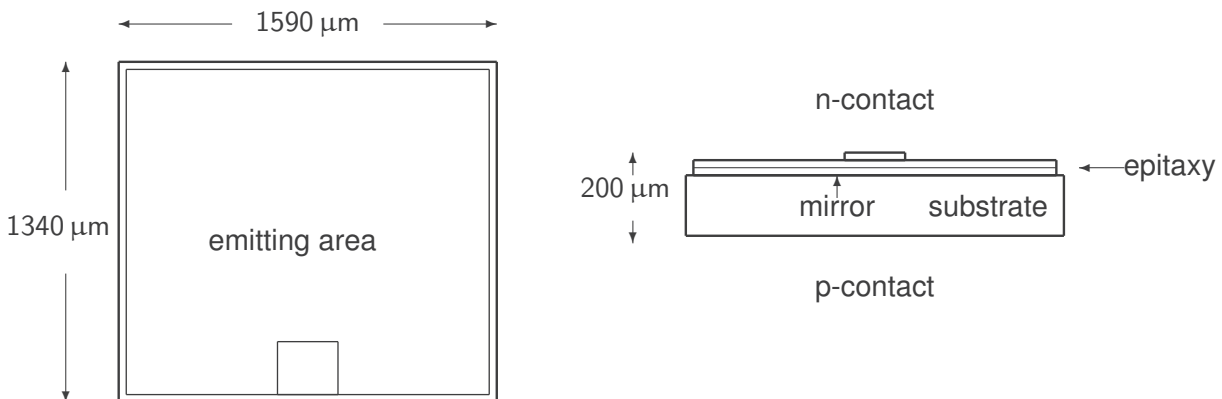
Features

- Highest brightness InGaN white chip
- Chip level white conversion
- Top emitting device
- Lambertian radiation
- Optimized for SMT applications
- Grouping: luminous flux, color coordinates

Applications

- Solid state lighting
- LCD backlighting
- Lamps
- Displays
- Light indicators

Delineation



Mechanical characteristics

DESCRIPTION		MINIMUM	TYPICAL ¹	MAXIMUM
Chip size	(μm)	1550x1300	1590x1340	1650x1400
Chip height	(μm)	170	200	220
Bond pad diameter	(μm)	160x210	190x240	220x270
Top contact		Cathode (n), gold		
Bottom contact		Anode (p), AuSn		
Die attach		Soldering		

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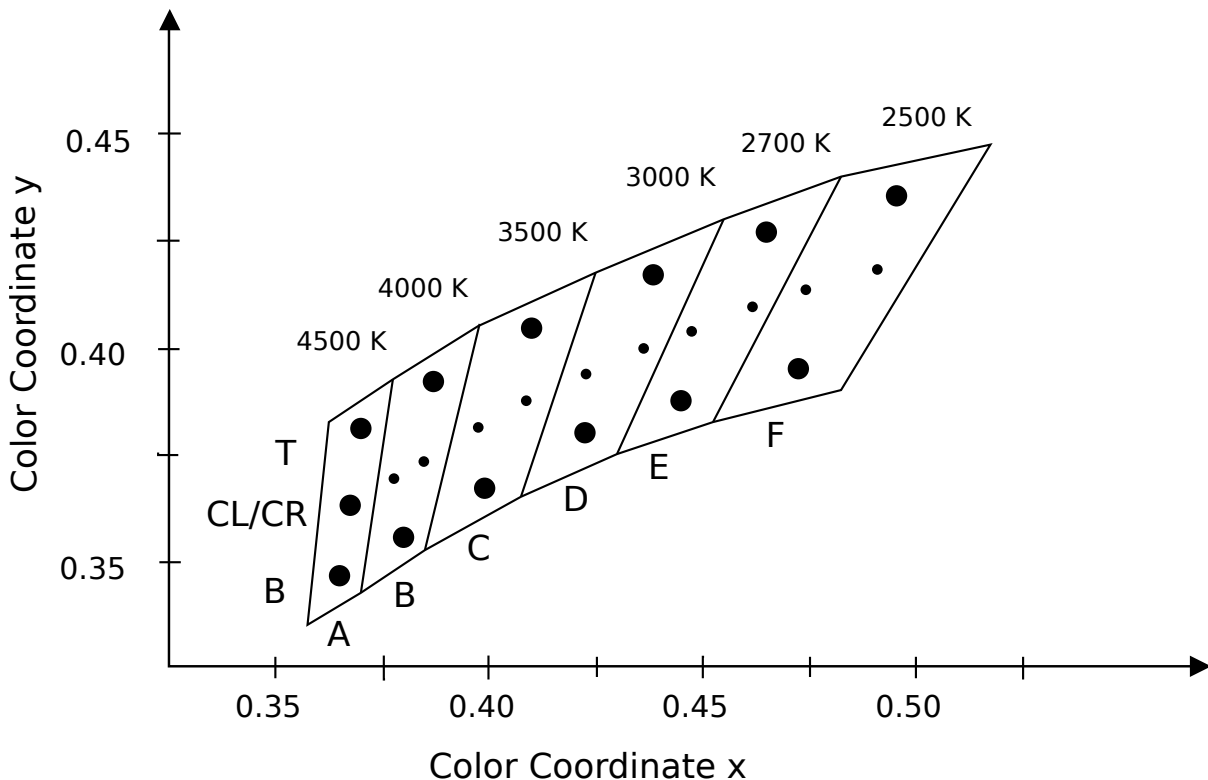
Electro-optical characteristics ($T_A = 25^\circ\text{C}$)²

PARAMETER	SYMBOL	CONDITION	MIN.	TYP. ¹	MAX.	UNIT
Forward voltage	V_F	$I_F = 1000 \text{ mA}$	2.80		4.20	V
Reverse voltage	V_R	$I_R = 10 \mu\text{A}$	5			V
Color coordinates	x, y	$I_F = 1000 \text{ mA}$		0.43/0.39		
Luminous flux	Φ_v	$I_F = 1000 \text{ mA}$	125000	160000		lm

Maximum ratings ($T_A = 25^\circ\text{C}$)³

PARAMETER	SYMBOL	VALUE	UNIT
Operating temperature range	T_{op}	-40...85	$^\circ\text{C}$
Forward current	I_F	1500	mA
Pulse current	I_P	2500	mA
Junction temperature	T_j	125	$^\circ\text{C}$

Color binning



LA WW60SP3

Premium Edition Warm White 60 mil



Binning ($I_F = 1000 \text{ mA}$)

		LEVEL
Luminous flux (lm)	> 125000	58
	> 160000	59
	> 200000	60
	> 250000	61

LA WW60SP3

Premium Edition Warm White 60 mil



Handling and Storage Conditions

Storage time for wafers in sealed condition is not limited by the die itself, but may be limited by the adhesion of the blue foil (storage ambient conditions: $T_a = 15 \dots 30^\circ\text{C}$; relative humidity: $< 60\%$, vertical storage). Therefore we ship the dice without any limitation of shelf life. Customer has to make sure that there is no glue from the adhesive foil on the backside either by a die shear test or by visual inspection of the backside before production. The hermetically sealed shipment lot shall be opened under temperature and moisture controlled cleanroom environment only. Customers have to follow the according rules for desposition as the material can be hazardous for humans and the environment. Dice have to be handled ESD sensitive.

Packing

Chips are placed on a blue foil inside a 6 inch ring or alternatively on a blue foil (mylar) only. For shipment the wafers of a shipment lot are arranged to stacks. Please use the recycling operators familiar to you. If required you can ask for our help. Please get in touch with your nearest sales office. By agreement we will take packing material back, if sorted. Transport costs of any kind must be paid by customers. For packing material that is returned to us unsorted or which we are not obliged to accept, any costs incurred will be invoiced to you.

Design Objectives

The chip design was developed and released based on the producer's standard assembly procedures and packaging. Bond strength properties are in accordance to MIL-STD-750D, method 2037. Whether the chip fits to the customer's products with its according die and wire bond procedures and packaging must be evaluated by the customer himself. If workability problems arise after this release a mutually conducted problem solving procedure has to be set up, if the chips are suspected of contributing to the problems. The chips are produced with best effort, but on chip level a subset of the chip characteristics can be determined only. Performance of the chip in the customer's products can only be determined by the customer himself.

Returns and Complaints

For complaints and returns of material a RMA-number is necessary. Samples for analysis purposes can be send to us without credit.

Shipping Conditions

If not otherwise arranged, the "General Terms of Business of Chips 4 Light GmbH" apply for any shipment. If this document is not familiar to you, please request it at our nearest sales office.

Disclaimer

Attention please!

- **Components used in life-support devices or systems must be expressly authorized for such purpose!**

Critical components⁴ may only be used in life-support devices⁵ or systems with the express written approval by us.

- All products, product specifications and data to improve reliability, function, design or otherwise are subject to change without notice .
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- The information describes the type of component and shall not be considered as assured characteristics. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
- Lead free product - RoHS compliant.
- The quality level of the final visual inspection shall comply to an AQL of 1.0 (according to MIL-STD-105E, level II), if the customer performs an incoming visual inspection of a shipment.

LA WW60SP3

Premium Edition Warm White 60 mil



- All chips are checked according to the producer's specification of the visual inspection. If this document is not familiar to you, please request it at our nearest sales office.

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Am Kuehlen Kasten 8
93161 Sinzing
Germany
www.chips4light.com
info@chips4light.com
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¹Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

²Measurements are done with an accuracy of $\pm 15\%$. Correlation to customer's equipment and products is required.

³Maximum ratings are package dependent and may differ between packages. The forward current is not limited by the die but by the effect of the LED junction temperature on the package. If you need more information on pulsed operation, please contact your next sales office about possible driving conditions. If not otherwise specified the maximum pulse current may not exceed the maximum current in continuous mode.

⁴A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

⁵Life support devices or systems are intended(a) to be implanted in the human body, or(b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered..

⁶Black points in the diagram represent the target color coordinates. You have to calculate usually with a distribution of ± 0.015 in x- and y-direction around this point.